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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/773,431

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EXAMINER

LAZORCIK, JASON L

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/773,431	Applicant(s) KAMIYA, NAOHIRO	
	Examiner JASON L. LAZORCIK	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 21, 2007 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Steps deemed critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Specifically, the pending claim 5 recites a method for manufacturing a magnetic disk however said claim fails to positively recite even a single process step. For at least the foregoing reason, Applicant is required to amend or cancel the instant claim.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the glass disk" in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The instant claim relates to a method for manufacturing a magnetic disk yet said claim fails to positively recite any steps. Since Applicant fails to positively recite at least one method step, the particular metes and bounds for which Applicant seeks patent protection are necessarily rendered unclear and indefinite. For at least the foregoing reasons, Applicant is required to amend or cancel the instant claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, and 4 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Saito (US 2003/0110803 A1).

The instant reference teaches the formation of texture on the polished surface of a glass disk using a texturizing tape (Figure 2, ¶[0016]). The glass substrate has a preferred composition (¶[0056-0066]) which reads directly upon the claimed composition set forth in claim 4. The substrate is subjected to the following required and/or optional processing steps;

Saltio teaches a processing with the following requisite and/or optional steps;

1. Polish the substrate to $Ra < 0.2nm$ – see ¶ [0067 to 0074]
2. Scrub wash using an alkaline aqueous solution with sonication - ¶ [0075]
3. Chemically strengthen in molten Na / K salt bath
4. Optional scrub wash / Ultrasonic wash in alkaline aqueous solution – see ¶ [0077]
5. Texturing step with texture tape with optional alkali component- ¶ [0077-0083]
6. Tape wash with alkali washing solution - ¶ [0088-0090]
7. Scrub wash with alkali solution - ¶ [0091-0094]
8. Ultrasonic wash with alkali solution - ¶ [0095-0098]

As evidenced by Steps 2, 3, and 4 above, the prior art discloses at least three separate procedures between the substrate polishing (e.g. mirror-polishing) step and the texturing step. Where each of the three steps are performed with the use of

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“chemicals” each is deemed to read upon the claimed “chemical treatment step for the mirror-polished glass substrate”.

Further, it will be appreciated by one of ordinary skill that strongly basic solutions particularly comprising sodium hydroxide result in the dissolution of silica to form sodium silicate or “water glass”. The instant reference teaches the use of strongly basic washes (e.g. pH 10) in the exemplary processes set forth in Table 3 and points to the known use of sodium or potassium hydroxide solutions in analogous substrate processing techniques (Pg 1, ¶ [0010]). To this end, the reference teaches that it is known to add sodium or potassium hydroxide to “add a chemical action to the mechanical processing force”. Although not explicitly disclosed in the Saito reference, it is the Examiners position, absent any compelling evidence to the contrary, that the scrub wash steps using an alkaline solution implicitly remove “at least a part of the polishing-affected layer as claimed”.

Should Applicant contest this assertion, then it is the Examiners position that the use of an alkaline solution comprising sodium hydroxide would present no more than a merely obvious extension over the prior art teachings. Specifically, it would be obvious to utilize a solution which provides a “chemical action” which compliments the scrubbing force in order to insure complete removal of the polishing abrasives and chemical strengthening reagents.

Finally, the disclosed chemical strengthening is understood to provide a tempered state through a process of ion exchange. During this process smaller ions

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are extracted from the surface of the glass and are replaced by larger ions from the molten salt solution. With this general understanding, the disclosed chemical strengthening process is understood to "remove at least a part" (e.g. surface ions) of the polished layer of the glass substrate.

Regarding the newly added limitation in claim 1 which pertains to the ratio of surface roughness measured in the circumferential vs. the radial directions of the glass substrate, Applicant is directed to the substantial similarity between the prior art process and Applicants own preferred embodiment.

Specifically, Applicants preferred embodiment is understood to provide preliminary polishing steps which yield a surface roughness, Ra, in the range of 300nm to 1 micron, a subsequent chemical strengthening step in potassium and sodium nitrate, a treatment in an alkaline sodium hydroxide solution. This treatment is followed by a texturing with polycrystalline diamond having an average 0.125 micron grain size wherein a 3.08 lb load is applied with a tape speed at 4.72 in/min.

Applicants preferred embodiment is contrasted with the prior art example which preliminarily polishes the substrate to Ra <0.25nm followed by chemical strengthening in a sodium/potassium nitrate salt bath and surface washing with an alkaline solution. Tape texturing is carried out with polycrystalline diamond with particle sizes in the range of 90 to 150nm with a load of 7 lbs and a tape speed of 3 inches/min. Texturing is followed by several alkaline washes, and it is disclosed that the final Ra value can be in

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the range of 0.59 nm with no abnormal projections in the circumferential direction (see Example 4, Table 3).

The key point is that an analysis of the prior art process and Applicants preferred embodiments reveal substantially identical process conditions utilizing substantially identical reagents and processing techniques. Although the prior art does not explicitly quote the anisotropic figure or the surface roughness ratio, it is the Examiners position that these values would follow as an inherent and natural consequence of the prior art processing conditions absent any compelling evidence to the contrary.

Alternatively should Applicant contest the inherency of the noted surface roughness values, it is then asserted that the claimed roughness ratio would constitute no more than a matter of routine optimization for one having a normal level of skill in the art at the time of the invention. Specifically, one of ordinary skill in the art would recognize the substrate surface roughness as an observed response variable which is dependent at least in part upon the baseline surface roughness of the polished substrate, the abrasive diamond particle size, abrasion load, and abrasive tape speed among other process variables.

The ultimate surface roughness of the manufactured substrate would have been recognized as a key manufacturing parameter for one of ordinary skill in the art at the time of the invention, and it would have been well within the prevue of a skilled practitioner to adjust at least the identified operating parameters in order to achieve a

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desired surface roughness value. In the absence of any showing of critical and substantially unexpected result derived from the claimed roughness ratio, said value is deemed to represent a merely routine modification/optimization over the disclosed prior art process.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito (US 2003/0110803 A1) as applied to claim 1 under 35 USC 102(b) above.

Regarding Claim 2, Sato fails to indicate the use of sodium hydroxide, potassium hydroxide, and or ammonium fluoride in a chemical treatment step. Saito does however teach that after polishing and prior to immersion in the chemical tempering it is highly

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desirable to wash residual slurry (polishing agent) from the disk surface. The reference continues by indicating that the washing step should make use of "an acidic aqueous solution or an alkaline aqueous solution and pure water". Aqueous solutions of both sodium hydroxide and potassium hydroxide are well known basic solutions to those of ordinary skill in the art. Since the subsequent chemical tempering step makes use of a mixed nitrate salts of both sodium and potassium, the use of one of the sodium or potassium hydroxide in the preceding washing step would have been an obvious choice in order to minimize contamination of the tempering bath with different ions.

With respect to claim 5, Saito fails to explicitly recite a step of forming a magnetic layer upon the as fabricated glass disk, however the reference repeatedly indicates(e.g. abstract) that said disk is intended for use as a magnetic disk. It would have been readily evident to one of ordinary skill in the art of fabricating magnetic disks and hard drives to deposit a magnetic layer upon the Saito glass disk when using the disk in the recommended application as a magnetic disk.

Response to Arguments

Applicant's arguments filed December 21, 2007 have been fully considered but they are not persuasive.

Applicant acknowledges that Saito discloses a scrub wash step using an alkaline solution, however applicant asserts that the disclosed was step is "clearly different from

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etching" as required by the amended claim language. Applicant repeatedly asserts that the claimed etching step is distinguished from the prior art washing step, yet Applicant fails to delineate how the claimed method is patentably distinguished from that disclosed in the prior art.

With respect to Applicants allegations, the Examiner is not persuaded.

Specifically in the previous Office Action dated August 23, 2007, Applicant was advised that the Saito scrub wash steps using a strongly alkaline solution implicitly remove "at least a part of the polishing-affected layer as claimed". Since Applicant has provided no rebuttal to this stated rationale regarding the effect of the prior art wash step, both the prior art wash and the claimed etch are understood to "chemically remove layers from a surface". In view of the foregoing, it follows that Applicant argument purporting a distinction between the prior art "wash" and the claimed "etch" steps amounts to a distinction without a difference. Therefore, Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Next, Applicant argues that "there is no basis in the Saito disclosure for utilizing a solution which uses "etching" to provide a chemical action. Applicant further asserts that "the Examiner is creating additional process steps without considering the effect on the overall production of a glass substrate having the characteristics as claimed".

With respect to the first of Applicants instant allegations, it is the Examiners position that Applicant has failed to delineate a patentable distinction between the prior art "wash" step and the claimed "etch" step in accordance with the above presented rationale. Therefore as set forth above, Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Next, with respect to Applicants allegation that the Examiner has created additional process steps, it is entirely unclear to the Examiner to what additional process steps Applicant is referring. It would appear that Applicant specifically contests that the prior art teaches a process step to "utilize a solution which provides a chemical action which compliments the scrubbing force". In response, it is the Examiners position that Saito expressly teaches in paragraph [0010] that it is known to utilize potassium hydroxide aqueous solution or a sodium hydroxide aqueous solution to add "a chemical action to the mechanical processing force". It follows that the contested "washing" or "etching" step to provide a "chemical action" is not a fabrication of the Examiner but rather an expressly disclosed step in accordance with the Saito reference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON L. LAZORCIK whose telephone number is

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(571)272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art
Unit 1791

JLL